

PRESS FOR PRODUCING SHAPED BODIES

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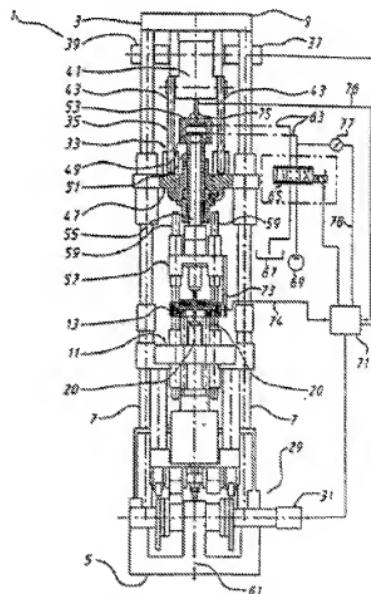
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Abstract of WO0020192

The invention relates to a press for producing shaped bodies, comprising a frame (3), a first drive element (35, 51) fixed on the frame (3) for a first extrusion die (17) to exert a pressure force on the shaped body, wherein a first die support (57) firmly fixed to the first extrusion die (17) is fixed on the output side (55) of the first drive element (35, 51). Said press also comprises a device (13, 19) codetermining the shape of the shaped body being produced, comprising at least one matrix (13) mounted on the frame (3) and including a control device (71) that changes the travel of the first drive element (35, 51). Said press is characterized in that a distance measuring device (73) is provided that furnishes a distance signal (74) corresponding to the distance between a predetermined position in the die support (57) and a predetermined position in the device (13; 19) codetermining the shape of the shaped body being produced and in that the control device (71) changes the travel of the first drive element (35, 51) depending on the distance signal (74).



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Press for manufacturing shaped bodies the present invention concerns a press for manufacturing shaped bodies by consolidating for example powdered or granular material. Such shaped bodies can be submitted to a sinter procedure after working by the press also to the formation of a ceramic body.

From EP 0679503 A1 a press is well-known for manufacturing shaped bodies, with which a stencil to the pick of the material which can be compressed, a press stamp moving from above on the material which can be compressed and from downside a press stamp moving on the material which can be compressed are attached at a press rack. To compressing the material the upper press stamp is brought first into a catch position, and one moves then the lower press stamp towards the upper press stamp, whereby also the stencil accomplishes a movement into a direction of movement common with the lower press stamp.

In such a manner up that too little starting material is filled into the stencil, or pressure variations arise to footstep now with the filling of the stencil a fault with operation of the drives for the press stamps or the stencil, then it is possible that one continues to penetrate the press stamp as intended into the stencil, what to unexpected deviations in the dimensions of the manufactured shaped body and if necessary, to a damage of the stencil and/or the stamp to lead can.

It is thus an object of the present invention to create a press which the production of shaped bodies with defined dimensions made possible and/or which possibility of a mutual damage is reduced by stamp and mould.

The invention goes thereby out from a press with a press rack and a drive for a press stamp, specified at the press rack, to exercising a pressing force on the shaped body, whereby at the drift side of the drive a connected stamp carrier fixed with the press stamp is fixed. Here the design of the finished shaped body to the one contributed by an end face of the press stamp, and it on the other hand contributed by an arrangement, which covers at least a stencil attached at the press rack, which takes up the shaped body during the Pressvorgangs and from which the finished shaped body is finally discharged. Furthermore here control means are intended, which changes the lift of the drive.

The invention is the basis the idea to accomplish as exact a determination of the actual position Stempelendes as possible concerning the shape of the finished shaped body to other contributing arrangement in order to reach to a well-defined dimensioning of the shaped body and to avoid on the other hand the mutual damage from stamp and stencil to. Here it is to be noted however that a direct determining the position of the press stamp is difficult, since this into the stencil penetrates and transfers the pressing power handling if necessary at material load limits to the material, so that a mounting of measuring sensors is directly problematic at the stamp. If the determination of the stamp position should be possible however with sufficient accuracy, then then a further compression procedure can be broken off, if the determining the position Stempelendes indicates an approach to a goal value. This makes the position Stempelendes taken with completion of the compression procedure also more strongly independently of strains of the press, in particular for instance for elongations or upsettings of the press rack, developing due to the exertion of pressure, the components of the drive or strains of the stamp carrier or stamp.

- ▲ top Spacer measuring instrument is according to invention intended at the press, which supplies a spacer signal, which corresponds a spacing between a predetermined position at the stamp carrier and a predetermined position to the form of the manufactured shaped body to contributing arrangement, whereby the steering mechanism changes the lift of the drive in dependence of the spacer signal. Over the spacer signal the control means receive thus information, which indicates the actual position Stempelendes as a good approximation, why then a precise actuation of the drive and/or. Change of the stroke of the drive essentially independently of elongations or upsettings of the press rack or other components possible is.

Favourable way is arranged the predetermined position to the form of the manufactured shaped body contributing arrangement at the stencil. It is possible thereby to manufacture the regions of the finished shaped body, which are essentially determined by interaction by stencil and front face of the press stamp, particularly precisely. Furthermore it is here also possible to avoid a mutual damage from press stamp and stencil to.

Favourable way is intended that the shape of the manufactured shaped body covers contributing arrangement a second press stamp, which exercises a further pressing force on the shaped body, which is aligned under an angle from in particular 180 degrees to the pressing force of the first press stamp.

Alternatively or in addition to the arrangement of the predetermined position at the stencil the predetermined position is then arranged at the second stamp carrier to the shape of the manufactured shaped body contributing arrangement.

Thereby in particular such dimensions of the manufactured shaped body are particularly precisely kept, which are certain by the distance between the front surfaces of the two press stamps with the applying of the final pressure.

Here it is favourable to specify to a pre-determined distance appropriate target spacer signal and to change the lift of the drive in such a manner by the control means that the spacer measuring instrument supplies the target distance signal.

This target distance signal can be for example specified, by before the actual Preßvorgang of the Preßtempel by the drive on the desired target final position Stempelendes concerning the stencil and/or, the front surface of the second press stamp in its target end position and the spacer signal here supplied by the spacer measuring instrument is moved as target distance signal is used.

Favourable way covers the drive a langhubige booster stage, at whose drift side a short-stroke booster stage is fixed, at whose drift side, specified at the press rack, again the stamp carrier is fixed.

Here the pressing force is increaseable by an enlargement of the respective stroke of the two booster stages, and the control means change the lift of the langhubige booster stage and/or for the lift of the short-stroke booster stage in dependence of the spacer signal. Here the langhubige booster stage can essentially become the closing of the mould and into short-stroke booster stage pre-set controlled and proportioned approach to a final position Stempelendes inserted.

In particular if the lift of the short-stroke booster stage is more precisely more adjustable than the lift of the langhubige booster stage is it favourably, to adjust to the depositing of a final pressure to the shaped body first the langhubige booster stage into a pre-determined Hubstellung and to change then the lift of the short-stroke booster stage in dependence from the spacer signal to. This leads in particular then to a quick, precise and from elongations of the press rack and other components independent adjustable of the final pressure, if the pre-determined Hubstellung of the langhubige booster stage can be stopped precisely and reproducibly.

Favourable way is intended stroke measuring instrument, which supplies appropriate stroke signal to the lift with of the short-stroke booster stage, whereby the control means adjust the grosshubige booster stage to the depositing of a final pressure to the shaped body first into a pre-determined Hubstellung and change the lift of the short-stroke booster stage in dependence of the stroke measuring signal. In particular if the pre-determined Hubstellung of the langhubige booster stage is precise and reproducibly more adjustable, the stroke signal already supplies a relatively exact measure for the position Stempelendes concerning the mould.

For adjustment the necessary final pressure is here favourable it to specify a target stroke signal whereby the control means change then the lift of the short-stroke booster stage until the stroke measuring instrument supplies the target lift signal. Favourable way thereby the stroke measuring instrument for the precise adjustment of a catch position of the Matze is used, whereby the target lift signal indicates then the position, from which the compression procedure begins.

A favourable embodiment of the invention plans a away-bound press transmission, in particular a cam gear and/or a thrust crankshaft-and-connecting-rod drive as langhubige booster stage. A such transmission permits a particularly precise adjustment and reproducibility to that preceding described pre-determined Hubstellung of the langhubige booster stage if this pre-determined Hubstellung is a position of maximum stroke of the booster stage.

Further a favourable embodiment of the invention plans a in particular hydraulic piston cylinder equipment as short-stroke booster stage, whereby then the stroke measuring instrument described above favourable proves the position of the piston of the piston cylinder equipment concerning the cylinder of the piston cylinder equipment seized, since then the stroke measuring instrument supplies a stroke signal, which corresponds to the actual lift of the short-stroke booster stage particularly exactly.

Here the change of the stroke of the short-stroke booster stage takes place favourable-proves via a change of the lead and/or the discharge of a pressure fluid to the piston cylinder equipment, whereby then the stroke measuring signal favourable-proves inserted as a controlled variable for adjustment a desired stroke of the booster stage become can.

Furthermore favourable way is intended pressure measuring instrument, which supplies to a pressure with the piston cylinder equipment of supplied pressure fluid appropriate pressure signal. The control means can likewise change then the lift of the kleinhubige booster stage in dependence of the pressure signal.

Here it is favourable that the control means cover a protector, the one enlargement of the stroke of the grosshubige and/or kleinhubig towards booster stage. D. h. a further increase of the pressure, prevents if the pressure measuring instrument signals a pre-determined border pressure to exceeding pressure. Thereby an overloading and with it possibly accompanying a deformation can be avoided of components of the press.

It is likewise intended with the fact that the control means exhibit a further protector, which makes an enlargement of the stroke dependent on a pressure increase there with the production of a shaped body. D. h. with the compression of the starting material, a pressure increase with a characteristic stroke increase accompanies. Device for example due to a misadjustment of the press stamps in contact with the stencil or was filled an incorrect quantity of starting material into the stencil, develops a deviation of this characteristic stroke increase, which can be recognized as faults. The control means can prevent then a further enlargement of the stroke.

The present invention becomes favourable-proves inserted the production of shaped bodies, which exhibit a surface formed by a wall of the stencil, which runs under a pointed angle to a surface of the shaped body formed by the stamp end face. Thereby the production is facilitated by particularly sharp edged shaped bodies.

In the following the invention is more near described on the basis an embodiment represented in the designs. Here shows: Fig. 1 a side view of a schematic press in accordance with the available Invention as well as a diagrammatic illustration of a control system for this press, Fig. 2 an increased representation of a stencil in Fig. 1 represented Press, and Fig. 3 one the figure 1 appropriate representation of a further execution form of the invention.

One in Fig. 1 represented press 1 covers a press rack 3 from a bottom plate 5, two with its ends at the bottom plate 5 fastened itself and perpendicularly to the bottom plate 5 and parallel to each other extending cross-beams 7, which at their other ends by a connecting plate 9 are more fixed connected with one another.

In a middle region of the cross-beams 7 a tool cross beam 11 movable led on the cross-beams 7 is. The stencil 13 is supported and with the press rack 3 connected fixed by bars 20 opposite the base 5. The stencil 13 points one from Fig. 2 cavity 15 to the pick of the starting material for the shaped body, which can be manufactured which can be inferred,

up.

To the cavity 15 above an upper press stamp 17 and from downside a lower press stamp 19 lead from, whereby the two press stamps in each case are more movable 17,19 along an axis 61. In the sectional view of the Fig. the upper press stamp 17 exhibits 2 a larger cross section than the lower press stamp 19.

In the figure 2 the two press stamps 17,19 are represented furthermore in an end position of the compression procedure, whereby the stencil in its cross section continuous of an end face 21 of the upper press stamp 17 tapers itself to a Fläche 23 of the lower press stamp 19. The cavity 15 exhibits thereby in the representation of the figure 2 a trapezoidal cross section, whereby side walls 25 and 27 of the stencil 13 include in each case a pointed angle A with the flat end face 21 of the upper press stamp 17. Press stamp of 17,19 manufactured shaped bodies lower upper with this arrangement of stencil 13 and exhibits likewise trapezoidal form in the cross section, for example can it with this shaped body a out ceramic Materiel manufacured turning gumption panel concern. This turning gumption panel exhibits then at its cutting face a cutting edge with the pointed angle A. In order to manufacture this cutting edge as precisely as possible, it is necessary that the upper press stamp 17 is approximated during the Pressvorgangs as precisely as possible the end position of the upper press stamp 17 represented in the figure 2. If the upper press stamp is approximated 17 not far enough from above to this end position, the developing turning gumption panel does not exhibit the desired pointed signing leagues transition at its cutting edge. On the other hand if the upper press stamp 17 is moved out with the Pressvorgang from the top over the represented end position, the end face 21 of the press stamp 17 collides with the side walls 25,27 of the stencil 13, which to a damage either the stencil 13 or the upper press stamp 17 drove. It is thus clear that a high quality of the manufactured shaped bodies and a damage-free operation of the press are possible if the approach of the upper press stamp 17 to its end position concerning the stencil 13 with high precision takes place.

The actuation of the lower press stamp 19, which likewise implements a compression movement beside the upper press stamp 17, in order to make an even compression possible of the shaped body with a reduction of the friction losses of the shaped body at the side walls 25,27, in compression, is made by between the base a 11 and the bottom plate 5 arranged and at the cross-beams 7 of the press rack 3 fixed driving mechanism 29, which is propelled by an adjusting mechanism 31, for example an electric motor, and that the tool cross beam 11 on and off moved, in order to off move also the lower press stamp 19 specified at the tool cross beam 11 on and.

The actuation of the upper pressing temple 17 takes place via a two-stage driving mechanism 33 arranged between the base 11 and the connecting plate 9. The first drive stage covers a Kniehebelgetriebe 35 with at the cross-beams 7 of the press rack 3 stored and from an adjusting mechanism 37, for example an electric motor, propelled primary shaft 39, which carries an eccentric 41, at whose eccentric cam end two crank rods 43 are linked. The other ends of the crank rods 43 are linked at a guidance cross beam 47 stored displaceable in longitudinal direction of the cross-beams 7 at the cross-beams 7, so that a rotational movement of the drive shaft 39 of the Kniehebelgetriebes 35 leads to an offset of the guidance cross beam 47 of the Kniehebelgetriebes 35 relative the press rack 3 and along the axis 61.

The guidance cross beam 47 carries a piston 49 for a piston cylinder unit 51, which forms the second booster stage. In the cylinder 49 parallel to the direction of movement of the guidance cross beam 47 relative the press rack 3 movable piston 53 is arranged, which is connected by a piston rod 55 fixed with a stamp carrier 57 arranged between the guidance cross beam 47 and the base 11. The stamp carrier 57 is led at two parallel to the cross-beams 7 of the press rack 3 extending and at the base 11 fastened guidance cross-beams 59, so that with the stamp carrier 57 fixed connected upper press stamps 17 along the axis 61 is more movable.

The piston cylinder unit 51 points two Zu-bzw. Derivatives 63 for a hydraulic fluid up, whereby over this hydraulic fluid the position of the piston is more adjustable 53 in the cylinder 49. Zu-bzw. Discharge of the hydraulic fluid to the piston cylinder unit 51 becomes 65 actuated by an electrical actuated hydraulic valve, and a hydraulic fluid pump 69 is connected to which further with a fluid reservoir 67.

The Kniehebelgetriebe 35 points here a longer operational field and/or. Lift up as the piston cylinder unit 51. The Kniehebelgetriebe 35 as langhubigen booster stage and the piston cylinder unit 51 as short-stroke booster stage become by actuation of the electric motor 37 and/or. Actuation of the Hydraulikventils 65 in movement shifts, whereby the drive of the engine 37 and the hydraulic valve 65 via an electrical control 71 takes place.

At the stamp carrier 57 a distance sensor 73 is fastened, which seizes the distance between the stamp carrier 57 and the stencil 13. The distance sensor 73 makes a spacer signal available 74, which is supplied to the control 71.

At the cylinder 49 of the piston cylinder unit 51 a stroke sensor 75 is fastened, which seizes the position of the piston 53 concerning the cylinder 49 and thus the instantaneous lift of the piston cylinder unit 51. The stroke sensor 75 makes a stroke signal available 76, which is likewise supplied to the control 71.

To the filling of the cavity 15 of the stencil 13 with the powdery material which can be compressed to the shaped body the lower press stamp 19 is positioned into a Füllstellung slightly retracted in relation to the end position represented in the figure 2 by operation of the adjusting mechanism 31 of the driving mechanism 29. The upper press stamp 17 is removed pressing of the electric motor 37 from the langhubigen Kniehebelgetriebe 35 so far from the stencil 13 that a simple entrance to the cavity is possible with the powdery material 15 to the filling of the same.

After the filling with the powdery material the stencil 13 becomes essentially 35 sealed by the actuation of the langhubigen Kniehebelgetriebes, as across the stamp carrier 57 at the guidance cross-beams the 59 13 stamps 17 to the interference into the stencil 13 upper led concerning the stencil, whereby the piston 53 in the cylinder 49 in a retracted position is held, D is brought. h. in a position, in which the piston 53 within the cylinder 49 far away from the stencil 13 is arranged.

During the following Pressvorgang the lower press stamp 19 is moved pressing of the driving mechanism 29 toward to the upper press stamp 17, and the upper press stamp 17 is moved by operation of the piston cylinders unit 51 toward to the lower press stamp 19. This drove to a compression of the powdery material and to the production of the shaped body.

After production the shaped body can be discharged after withdrawing the upper press stamp 17 for example by further actuation of the lower press stamp 19 from the stencil 13.

To the sealing of the stencil 13 the control 71 induces the Kniehebelgetriebe 35 into a position of maximum stroke, D. h. into a position, in which the guidance cross beam removed 47 their furthest from the drive shaft 39 and thus its next position approximate to the stencil 13 takes. This position of maximum stroke is more adjustable and well repeatable with the used Kniehebelgetriebe 35 precise. Thus the end face 21 of the upper press stamp 17 is with starts of the compression procedure in a probably-certain distance of the end position of the compression procedure represented in figure 2. During the compression procedure taking place afterwards the control 71 moves the piston 53 in the cylinder 49 toward to the stencil 13 pressing of the hydraulic valve 65, by increasing the lift of the piston cylinder unit 51 continuous. The lift of the piston cylinder unit 51 is regulated by the control 71 by controlling of the stroke signal spent by the stroke sensor 75.

The control 71 the ended compression movement implemented by the piston cylinder unit 51 if the spacer signal a before adjusted set point supplied by the distance sensor reach 73 spent and you. This set point was determined first, as with stencil 13 not filled with powdery material the Kniehebelgetriebe was brought to 35 into its position of maximum stroke and then the upper press stamp 17 was approximated by operation of the piston cylinder unit 51 to the end position represented in figure 2, whereby sequential control took place for example with the eye, in order to avoid a mutual damage of the upper press stamp 17 and the stencil 13. The spacer signal 74 transferred after approach of the upper press stamp 17 to this end position of the distance sensor 73 then as target distance signal in the control 71 one stores. With the press 1 thus particularly precise turning gumption panels with sharp cutting edge can be manufactured, there the compression procedure of the shaped body not in dependence of maximum pressure, but becomes in dependence of a pre-determined end position of the end face 21 of the upper press stamp 17 ended. Furthermore at this press also a mutual damage is for example prevented by stencil 13 and upper press stamp 17 if due to a filling error too little were filled powdery material into the stencil 13.

Since for the statement of the end of the compression procedure the spacer signal 74 spent by the distance sensor is used and the distance sensor the distance between the stamp carrier 57 and the stencil 13 seizes, the accuracy of reaching the intended final position of the end face does not become 21 of the upper press stamp 17 by compression stress-conditioned elongations or compressions of the press rack 3, which components of the Kniehebelgetriebe 35, which impairs components of the piston cylinder unit 51 including the connecting rod 55. Only the compression of the upper press stamp 17 and a part of the stamp carrier 57 due to the exertion of pressure could falsely the actually reached end position. Since however the distance between the stamp carrier 57 and the end face 21 is strongly as laid as possible out small selected and the upper press stamp 17 in its cross section, this falsification is geringHugig. Furthermore also this falsification in certain can become mass compensated, by with that preceding described determination of the target distance signal this compression press stamp 17 and the part of the stamp carrier 57 correcting one considers.

As a safety precaution the press 1 exhibits pressure measuring instrument 77, which supervises the pressure of the hydraulic fluid in the lead 63 to the piston Zylinder unit 51 and this pressure appropriate pressure signal spends 78 to the control means 71. If the pressure in this lead exceeds a pre-determined border pressure, with which the control 71 receives this border pressure appropriate pressure signal 78, the so ended control 71 the compression procedure and emits if necessary an appropriate warning signal. Thereby an overloading of components of the press 1 is prevented due to for example a faulty operation. Furthermore the control 71 supervises the change of the pressure signal 78 and the change of the spacer signal 74 and the ended compression procedure during the compression procedure constantly if necessary with delivery of a warning signal, if the pressure increases with to small change of the spacer signal 74 too strongly. This points on the fact that the press is blocked for example by a contact between the upper press stamp 17 and the stencil 13. This safeguard can likewise take place via controlling of the relationship from pressure change and change of stroke of the piston cylinder unit 51.

Preceding a control of the change of stroke in dependence was described by the spacer signal 74, which of the distance sensor 73 is supplied, seizes the distance between the stamp carrier 57 and the stencil 13. There is here also modifications of the Abstandseignal 74 supplying distance sensors conceivably. So a modified distance sensor can seize for example the spacing between the stamp carrier and the base or another point at the press rack, or the position sensor knows the distance between for example the piston rod 55 and the stencil and/or, another place at the press rack seize. In the broadest sense is also that Stroke sensor 75 a such distance sensor, since it supplies a measure for the actual position Stempelendes concerning the stencil.

Furthermore also the further press stamp 19 can be provided with an equipment for the collection of the position its Stempelendes 23 concerning the stencil 13.

Besides it is conceivable to use alternatively for the piston cylinder unit another drive for the short-stroke booster stage for example crank mechanisms or other transmissions, whose lift is more adjustable. Alternatively to the described Kniehebelgetriebe also a piston cylinder unit can become as langhubige booster stage inserted.

Alternatively to that preceding described embodiment, with which the stencil 13 by the bars 20 fixed is connected with the press rack, the stencil can be also more movable the press rack stored and by a further drive relative to the upper press stamp 17 or \ and the lower press stamp 19 more movable be, in order to achieve a particularly homogeneous compression of the shaped body. Here the control means can likewise change for the lift of the further drive in dependence of the spacer signal, in order to increase the precision of the manufactured shaped body or to avoid a mutual damage from stencil and stamp to.

In the following a variant of the press represented in the figures 1 and 2 is described. Regarding their structure and their function appropriate components are each other provided with the reference numerals from the figures 1 and 2 designated, however to the distinction with a letter. For explanation on the entire preceding description respect is taken.

In contrast to that preceding the press represented in figure 3 exhibits described embodiment la a stencil 13a, whereby the Oberstempel and the stencil are 13a relative to a press rack 3a by means of a common main drive more movable.

Further a lower press stamp 19a at a lower stamp carrier 58 is fixed described embodiment in contrast to that to preceding at the press represented in figure 3 la, which is fixed again at the support 3a.

The press la is in particular suitable for manufacturing shaped bodies whose height exhibits particularly low tolerances. The height of the shaped bodies is essentially certain by the distance between the end faces of the two press stamps 17a and 19a assigning one on the other with the depositing of the final pressure on the shaped body. In order to be able to adjust this distance with the depositing of the final pressure particularly precisely, the press exhibits la spacer measuring instrument 73a, which seizes the spacing between the stamp carrier 57a of the upper press stamp 17a and the stamp carrier 58 of the lower press stamp 19a and indicating spacer signal 74 to the control means 71a supplies this distance. The control means 71a change then to the application of the final pressure on the shaped body the lift of the driving mechanism 33a for the upper press stamp 17a in such a manner that with the depositing of the final pressure on the shaped body the spacer measuring instrument 73a supplies a spacer signal 74, which corresponds to a pre-determined target distance signal. The target spacer signal vora the upper press stamp and the stamp carrier of the lower press stamp over in each case own spacer measuring instrument to be seized. Two spacer signals are then supplied to the control means, whereby the control means can change the change of the drive for the upper press stamp and/or the lift of the drive for the lower press stamp in dependence of the two spacer signals.



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Patentsprache 1. Press for manufacturing a shaped body, comprising: - a press rack (3), - one at the press rack (3) fixed first drive (33) for a first press stamp (17) to exercising a pressing force on that Shaped body, whereby at the drift side (55) of the first drive (33) more connected a first stamp carrier (57), fixed with the first press stamp (17), is fixed, - the form of the manufactured shaped body contributing at order (13,19), which at least one at the press rack (3) attached stencil (13) covers, and - the lift of the first drive (33) changing control means (71), characterised in that spacer measuring instrument (73) is intended, which supplies a spacer signal (74), a spacing between egg of ner predetermined position at the stamp carrier (57) and one before-determine ten place at that it contributes the shape of the manufactured shaped body the arrangement (13,19) corresponds and that the control means (71) that Lift of the first drive (33) in dependence of the spacer signal (74) changes.

2. Press according to claim 1, characterised in that taxa-smell tung (71) the lift of the drive (33) changes in such a manner that distance the measuring instrument (73) a pre-determined distance appropriate Target distance signal supplies.

3. Press according to claim 1 or 2, characterised in that the vorbe tuned place at the form of the manufactured shaped body the mitbe being correct arrangement at the stencil (13) is arranged.

4. Press according to claim 3, characterised in that target Final position the shaped body turned Stempelendes (21) it of the sten press stamp (17) concerning the stencil (13) is intended, which essentially takes the stamp end (21), if distance the measuring instrument (73) supplies the target distance signal.

5. Press after one of the claims 1 to 4, characterised in that those Stencil (13) at the press rack (3) is fixed.

6. Press according to claim 5, characterised in that relative to that Stencil movable second press stamp (19) for exercising one under egg nem angle from in particular 180 to the pressing force of the first Pressstem pels (17) working second pressing force on the shaped body is intended that the second press stamp (19) with a second stamp carrier is fixed federations and that the second stamp carrier at a drift side one is fixed at the press rack (3) fixed second drive.

7. Press after one of the claims 1 to 5, characterised in that the form of the manufactured shaped body contributing arrangement egg nem relative to the stencil movable second press stamp (19a) to Exercise one under an angle from in particular 180 to the pressing force of the first press stamp (17a) working second pressing force on the mould bodies enclosure that the second press stamp (19a) is connected to 58) fixed with a second Stem more peiträger (and that the predetermined position at that those Form of the manufactured shaped body contributing arrangement at the second stamp carrier (58) is arranged.

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8. Press according to claim 7, characterised in that target Final position the shaped body turned Stempelendes first Press stamp (17a) concerning the second stamp carrier (58), in particular concerning the shaped body turned Stempelendes second Press stamp (19a), is intended, which the stamp end first Press stamp (17a) essentially takes, if Abstandmessein direction (73a) supplies the target distance signal.

9. Press according to claim 7 or 8, characterised in that second Stamp carrier (58) at the press rack (3) fixed and the stencil (13a) at a drift side third specified at the press rack Drive is fixed.

10. Press according to claim 9, characterised in that taxa-smell tung (71a) also the lift of the third drive (29a) in dependence of the spacer signal (74) changes.

11. Press after one of the claims 1 to 10, characterised in that the first drive (33) one at the press rack (3) fixed langhubig Booster stage (35) exhibits, at their drift side (47) a short-stroke Booster stage (51) fixed is, at their drift side (55) again that Stamp carrier (57) is fixed, whereby the pressing force is increasable by a size rung the respective stroke of the two booster stages (35,51), and that the control means (71) gradate the lift the langhubigen drive (35) and/or changes the lift of the short-stroke booster stage (51) in Abhän gigkeit of the spacer signal (74).

12. Press according to claim 11, characterised in that taxa-smell tung (71) to the depositing of a final pressure to the shaped body the long hubige booster stage (35) into a pre-determined Hubstellung adjusts and the lift of the short-

stroke booster stage (51) in dependence of the starting from condition signal (74) changes.

13. Press according to claim 11 or 12, characterised in that a lift measuring instrument (75) is intended, which the lift of the short-stroke
Booster stage (51) appropriate stroke signal (76) supplies, and that the Steu ereinrichtung (71) gigkeit from the stroke
signal (76) it changes the lift of the short-stroke booster stage (51) in Abhän.
14. Press according to claim 13, characterised in that taxa-smell tung (71) the lift of the short-stroke booster stage (51)
changes in such a manner that the stroke measuring instrument (75) a pre-determined lift appropriate
Target lift signal supplies.
15. Press after one of the claims 11 to 14, characterised in that the langhubige booster stage a away-bound press
transmission, insbe separates a cam gear and/or a thrust crankshaft-and-connecting-rod drive (35) enclosure.
16. Press after one of the claims 11 to 15, thus gekenn zeichent that the pre-determined Hubstellung is a position of
maximum stroke langhubi towards booster stage (35).
17. Press after one of the claims 11 to 16, characterised in that the short-stroke booster stage (51) in particular
hydraulic pistons
Cylinder equipment covers.
18. Press according to claim 17 in connection with claim 13, thus gekenn zeichent that the stroke measuring instrument
(75) to-resembled the position of the piston (53) the cylinder (49) the piston cylinder equipment seized.
19. Press according to claim 17 or 18, characterised in that one
Pressure measuring instrument (77) is intended, which a pressure one that
Piston cylinder equipment (51) of supplied pressure fluid appropriate
Pressure signal (78) supplies, and that the control means (71) furthermore in dependence of the Drucksig gnal (78) it
changes the lift of the short-stroke booster stage (51). 20. Press according to claim 19, characterised in that taxa-smell
tung (71) a first protector covered, the one enlargement of the
Stroke of the langhubigen and/or the short-stroke booster stage (35,51) prevents, if the pressure measuring instrument
supplies a pressure signal (78), which corresponds to a pressure, which is larger than a pre-determined border pressure.
21. Press according to claim 19 or 20, characterised in that the tax mechanism (71) a second protector covers, which
prevents a size rung the stroke of the short-stroke booster stage (51) in dependence of egg more ner a spacer
acceptance corresponding change of the spacer signal (74) and one a pressure increase appropriate change pressure of
the signal (78), if a relationship from the pressure increase and the spacer acceptance is larger than a pre-determined
value.
22. Press after one of the claims 1 to 21, characterised in that with in the target final position arranged first press stamp
(17) a Stempel lendläche (21) of the first press stamp (17) essentially gap-free at a wall surface (25,27) of the stencil
(13) attaches, whereby the Stempel lendläche (21) of the first press stamp includes and the wall surface (25,27) a
pointed angle (A).